Changing the Way the Army Fights: The Role of Precision Munitions

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Precision Strike Association

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Agenda

- Changing Paradigms
- Emerging Concepts for Precision Munitions
- What's Next in Precision Munitions Technology
- The Future: Precision Munitions and the Army After Next

Some Challenges Prior to the Development of Effective Precision Guided Munitions

- **Anti-Armor Challenges**
  - Light Infantry Vulnerable to Armor
  - Heavy Anti-Armor Mission Limited Primarily to Tanks
- **Aviation Challenges**
  - Army Aviation Ability to Engage Armor Limited
  - Severe Weather Constraints

- **Indirect Fire Challenges**
  - Counter Battery Fire Against Self-Propelled Artillery Extremely Difficult
  - No Effective Capability for Deep Interdiction
  - Indirect Fire Against Armor Relatively Ineffective
- **Air Defense Challenges**
  - Limited Air Defense Capability Against High-Performance Aircraft
  - No Ballistic Missile Defense
- **C4ISR Challenges**
  - Limited Ability to Acquire/Exploit Targeting Information Beyond FEBA

Sample Modern Army Precision Guided Munitions

Copperhead

TOW2A

TOW2B

Redeye

Stinger

Patriot

PAC-3

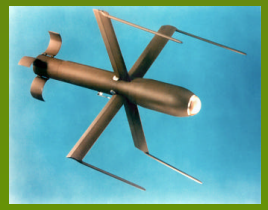
Hellfire

Javelin

Dragon

Longbow Hellfire

SADARM



BAT

GMLRS

1975 1980 1985 1990 1995 2000 2005 2010

Winning the Close Fight Against Armor

Old Paradigm

- Infantry Weapons Lacked Range, Accuracy, and Firepower to be Effective Against Tanks
  - LAW
  - IFV-Mounted Guns
  - Dragon

New Paradigm

- TOW Permits IFVs and HMMWVs to Engage Heavy Armor
- Javelin Permits Infantry to Effectively Engage MBTs
- Improved TOW
  -
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New Indirect Fire Capabilities

Old Paradigm

- Army Forces Unable to Perform Deep Interdiction Mission
- Limited Indirect Fire Capabilities vs. Tanks & SPH
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New Paradigm

- BAT Permits Deep Attack Against Armor Formations
- SADARM Provides Effective Counterbattery Against Mobile Artillery
- Guided MLRS Enhances Capability to Interdict Broad Range of Deep Targets
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Enhanced Firepower for Army Aviation

Old Paradigm

- Primary Weapons Employed by Helicopters Lacked Accuracy and Power to Engage Heavy Armor
  - 20mm & 30mm Guns
  - 2.75” Rockets
- First Generation of Helicopter PGMs Limited by Weather

New Paradigm

- Hellfire Allows Scout and Attack Helicopters to Engage Modern Tanks
- Longbow Hellfire MMW Guidance Provides All-Weather Capability

Modernized Air Defense

Old Paradigm

- Anti-Aircraft Guns and SAMs Provided Limited Defense Against High-Performance Attack Aircraft
  - Vulcan
  - Redeye
  - Chapparel
  - HAWK

New Paradigm

- Stinger Provides Effective Short-Range Defense Against Threat Aircraft
- PAC-3 Provides High- and Medium Altitude Defense Against Aircraft and Ballistic Missiles

Putting PGMs to the Test: Task Force XXI and Division AWEs

- TF XXI AWE (March 97)
  - Demonstrated Effectiveness of Javelin-Armed Light Infantry vs. Armor
  - Demonstrated Capability of Longbow Apache to:
    - Engage From Longer Range
    - Attack Multiple Targets Simultaneously
    - Fight in Adverse Weather
  - Proved Reconnaissance/Surveillance Value of UAVs
- DAWE (November 97)
  - Advanced Sensors (AH-64D, Comanche, JSTARS, UAV) Provided Valuable Sensor-to-Shooter Links, Increasing Responsiveness and Lethality

Rapid Force Projection Initiative ACTD

•**MISSION: Provide Increased Survivability, Lethality, Tempo, and Target Acquisition Capability to Early Entry Forces.**

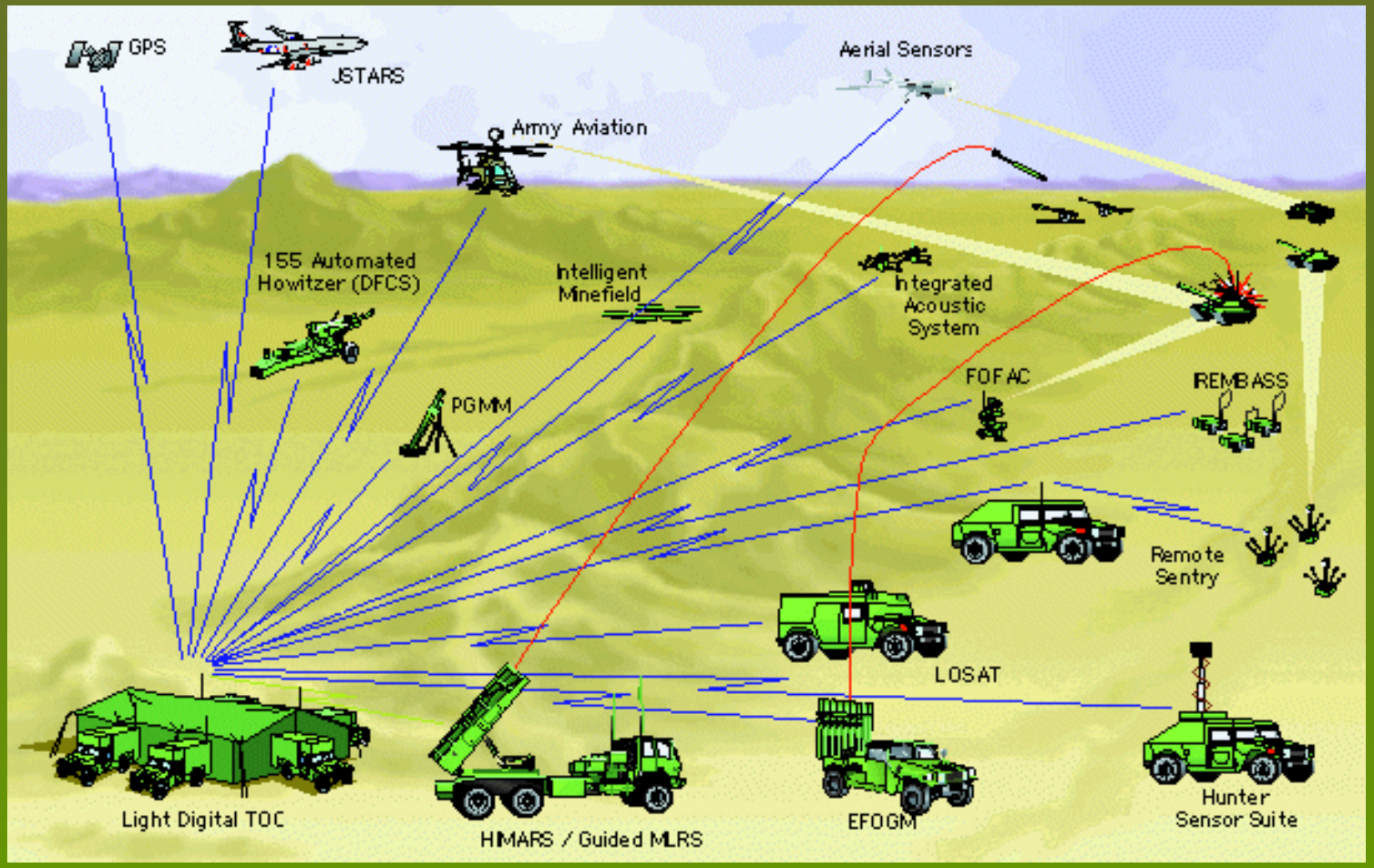
•**OBJECTIVE:**

- **Demonstrate Capability of the RFPI System-of-Systems "Hunter/stand- off Killer Concept in an Operational Environment.**
- **Bridge the Anti-Armor Capability Gap That Faced Early Deploying Forces in Operation Desert Shield**

HUNTERS	STAND-OFF KILLERS
RFPI	*RFPI*
Integrated Acoustic System	EFOGM
Hunter Sensor Suite	HIMARS
Remote Sentry	Automated Howitzer
101AA	*101AA*
OH-58D	105/155mm Howitzer
Sentinel	Mortars
Improved Remotely Monitored Battlefield Sensor System	Javelin
	TOW/ITAS
	Attack Helicopter
	Stinger
	155mm SADARM

RFPI Concepts and Systems

Hunter/Stand-Off Killer (HSOK) Concept Employed Advanced Sensors to Detect & Acquire Targets and Stand-Off Weapons to Engage



RFPI Field Experiment

- Conducted July-August 98 at Fort Benning, Using 2d Brigade, 101st Airborne Division (Air Assault)
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- Demonstrated:
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  - Improved Survivability & Lethality of HSOK Concept and Weapons (Although Close Fight was not Eliminated)
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  - Improved Responsiveness in Ability to Detect/Attack Targets
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  - Effectiveness of RFPI Weapons
    - EFOGM Was #2 Battlefield Vehicle Killer After Apache

Broad Impacts of Precision Munitions

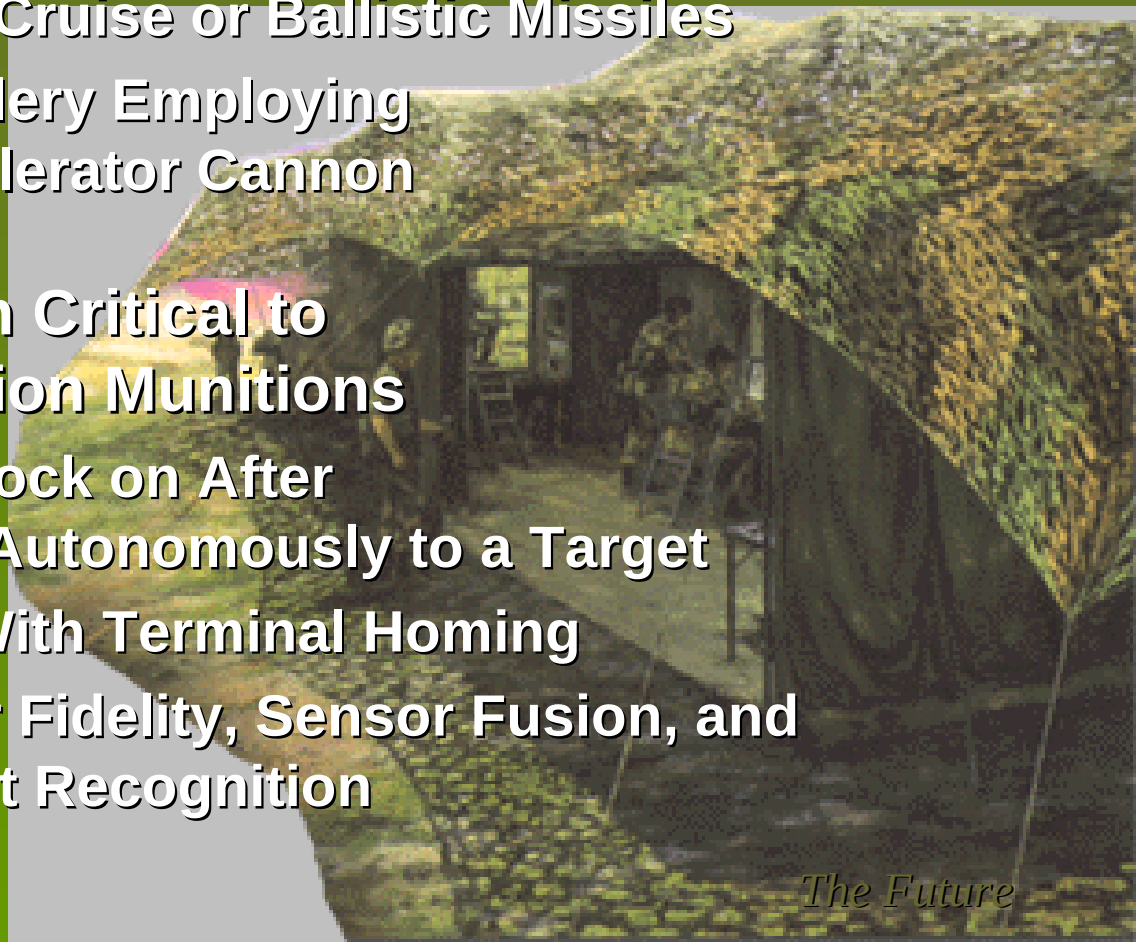
- **Capability to Attack Targets Previously Unserviceable - *Expanded Battlespace***
- **New Roles for PGM Users**
- **Reduced Collateral Damage**
- **Fewer Friendly Casualties**
- **Reduced Cost per Target Destroyed**
- **Reduced Logistics Burden**

New Technologies for Precision Munitions

- **Autonomous Precision Guidance**
  - **GPS-Aided Inertial Guidance System**
  - **MEMS**
  -
- **Enhanced Lethality Warheads**
  - **Greater Lethality in Smaller Package**
  - **Advanced Seeker Sensors**
  - **LADAR**
  - **Hyper Spectral**
  - **Automatic Target Recognition**
  - **W-Band Millimeter Wave**

Precision Munitions and the Army After Next

- Precision Fire Support Critical to AAN Maneuver
  - Laser Systems
  - Intercontinental Cruise or Ballistic Missiles
  - Continental Artillery Employing Blast-wave Accelerator Cannon
- Target Acquisition Critical to Employing Precision Munitions
  - Munitions Can Lock on After Launch and Fly Autonomously to a Target
  - Engage Target With Terminal Homing
  - Requires Sensor Fidelity, Sensor Fusion, and Automatic Target Recognition



Conclusion

Precision Guided Munitions Have Dramatically Altered How the Army Fights and Will Continue to Do So